

CLAIMS

What is claimed is:

- 5 1. In a communications device, a method for dynamically adjusting bandwidth of a communications channel, the method comprising the steps of:
- detecting a first event indicating a first anticipated change in a bandwidth requirement of the communications channel;
- calculating a first new value for a bandwidth setting of the communications
- 10 channel in response to detecting the first event; and
- adjusting a bandwidth characteristic of the communications channel according to the first new value of the bandwidth setting such that communications channel can accommodate the first anticipated change in the bandwidth requirement.
- 15 2. The method of claim 1 further comprising the steps of:
- performing communications on the communications channel using the bandwidth setting having the first new value;
- detecting an end of the first event indicating that the first anticipated change in a bandwidth requirement of a communications channel is complete; and
- 20 adjusting the bandwidth characteristic of the communications channel to an original value of the bandwidth setting that existed prior to the detection of the first event.
3. The method of claim 1 further including the steps of:
- detecting a second event indicating a second anticipated change in the bandwidth
- 25 requirement of a communications channel;
- calculating a second new value for a bandwidth setting of the communications channel in response to detecting the second event; and
- further adjusting the bandwidth characteristic of the communications channel according to the second new value of the bandwidth setting such that communications
- 30 channel accommodates the second anticipated change in the bandwidth requirement.

4. The method of claim 1 wherein the step of calculating a first new value for a bandwidth setting of the communications channel in response to detecting the first event comprises the steps of:

5           determining if the bandwidth event contains a bandwidth determination factor, and if the bandwidth event contains a bandwidth determination factor:

          i) extracting the bandwidth determination factor from the bandwidth event; and

          ii) calculating the new value for the bandwidth setting based on the  
10       bandwidth determination factor;

and if the bandwidth event contains a bandwidth determination factor, adjusting the bandwidth setting to at least one of a next higher level and a next lower level based on the bandwidth event.

15       5. The method of claim 3 wherein:

          the first bandwidth event indicates a first increased anticipated change in the bandwidth requirement of the communications channel and the second bandwidth event indicates a second increased anticipated change in the bandwidth requirements of the communications channel; and

20       wherein the first new value of the bandwidth setting is greater than a former value of the bandwidth setting and the second new value of the bandwidth setting is greater than the first new value of the bandwidth setting, such that the bandwidth characteristic of the communications channel is dynamically adjusted to raise the bandwidth of the communications channel in response to the first and second bandwidth events.

25

6. The method of claim 5 wherein at least one of the first bandwidth event and the second bandwidth event indicate a browser event for at least one of:

          i) a beginning of a communications session;

          ii) a beginning of content processing; and

iii) a user bandwidth request for additional bandwidth on the communications channel.

7. The method of claim 3 wherein:

5           the first bandwidth event indicates an increased anticipated change in the bandwidth requirement of the communications channel and the second bandwidth event indicates a decreased anticipated change in the bandwidth requirements of the communications channel; and

10           wherein the first new value of the bandwidth setting is greater than a former value of the bandwidth setting and the second new value of the bandwidth setting is less than the first new value of the bandwidth setting, such that:

15           i) the bandwidth characteristic of the communications channel is dynamically adjusted to raise the bandwidth of the communications channel in response to the first bandwidth event; and

20           ii) the bandwidth characteristic of the communications channel is dynamically adjusted to lower the bandwidth of the communications channel in response to the second bandwidth event.

8. The method of claim 7 wherein the second bandwidth event indicates an end of the first bandwidth event.

9. The method of claim 7 wherein the first bandwidth event indicates a browser event for at least one of:

25           i) a beginning of a communications session;

30           ii) a beginning of content processing;

and wherein the second bandwidth event indicates a browser event for at least one of:

          i) an end of a communications session;

          ii) an end of content processing; and

          iii) a timeout associated with an earlier bandwidth event.

10. The method of claim 1 wherein:

the communications device is a browser enabled device and wherein the first event indicates a browser event requiring a browser in the communications device to access content from a remote computer system; and

5 wherein the step of calculating calculates the first new value of the bandwidth setting of the communications channel to accommodate additional bandwidth used to receive the content from the remote computer system.

11. The method of claim 10 wherein the step of detecting the first event includes parsing  
10 content accessed by the browser to detect a content reference within the content.

12. The method of claim 10 wherein the step of detecting the first event detects a communications session message generated by the browser.

13. The method of claim 1 wherein the communications device is a wireless device and the communications channel is a wireless communications channel and wherein the bandwidth characteristic of the communications channel is at least one of:

- i) a timeslot allocation for a time division multiple access protocol operating on the communications channel;
- 20 ii) at least one frequency for a code division multiple access protocol operating on the communications channel; and
- ii) at least one frequency code for a code division multiple access protocol operating on the communications channel.

25 14. A communications device comprising:

an communications interface;

a memory system;

a processor; and

an interconnection mechanism coupling the communications interface, the

30 memory system, and the processor;

wherein the memory system is configured with a bandwidth manager application, that when performed on the processor, provides a bandwidth manager process that dynamically adjusts bandwidth of a communications channel operating on the communications interface by performing the operations of:

5 detecting a first event indicating a first anticipated change in a bandwidth requirement of the communications channel;

calculating a first new value for a bandwidth setting of the communications channel in response to detecting the first event; and

10 adjusting a bandwidth characteristic of the communications channel according to the first new value of the bandwidth setting such that communications channel can accommodate the first anticipated change in the bandwidth requirement.

15 15. The communications device of claim 14 wherein the bandwidth manager process further performs the operations of:

performing communications on the communications channel using the bandwidth setting having the first new value;

detecting an end of the first event indicating that the first anticipated change in a bandwidth requirement of a communications channel is complete; and

20 adjusting the bandwidth characteristic of the communications channel to an original value of the bandwidth setting that existed prior to the detection of the first event.

16. The communications device of claim 14 wherein the bandwidth manager process further performs the operations of:

25 detecting a second event indicating a second anticipated change in the bandwidth requirement of a communications channel;

calculating a second new value for a bandwidth setting of the communications channel in response to detecting the second event; and

30 further adjusting the bandwidth characteristic of the communications channel according to the second new value of the bandwidth setting such that communications channel accommodates the second anticipated change in the bandwidth requirement.

17. The communications device of claim 14 wherein when the bandwidth manager process performs the operation of calculating a first new value for a bandwidth setting of the communications channel in response to detecting the first event, the bandwidth manager process further performs the operations of:

determining if the bandwidth event contains a bandwidth determination factor, and if the bandwidth event contains a bandwidth determination factor:

i) extracting the bandwidth determination factor from the bandwidth event; and

ii) calculating the new value for the bandwidth setting based on the bandwidth determination factor;

and if the bandwidth event contains a bandwidth determination factor, adjusting the bandwidth setting to at least one of a next higher level and a next lower level based on the bandwidth event.

18. The communications device of claim 17 wherein

the first bandwidth event indicates a first increased anticipated change in the bandwidth requirement of the communications channel and the second bandwidth event indicates a second increased anticipated change in the bandwidth requirements of the communications channel; and

wherein the first new value of the bandwidth setting is greater than a former value of the bandwidth setting and the second new value of the bandwidth setting is greater than the first new value of the bandwidth setting, such that the bandwidth manager process dynamically adjusts the bandwidth characteristic of the communications channel to raise the bandwidth of the communications channel in response to the first and second bandwidth events.

19. The communications device of claim 18 wherein at least one of the first bandwidth event and the second bandwidth event indicate a browser event for at least one of:

i) a beginning of a communications session;

ii) a beginning of content processing; and  
iii) a user bandwidth request for additional bandwidth on the communications channel.

5 20. The communications device of claim 16 wherein:

the first bandwidth event indicates an increased anticipated change in the bandwidth requirement of the communications channel and the second bandwidth event indicates a decreased anticipated change in the bandwidth requirements of the communications channel; and

10 wherein the first new value of the bandwidth setting is greater than a former value of the bandwidth setting and the second new value of the bandwidth setting is less than the first new value of the bandwidth setting, such that:

i) the bandwidth manager process dynamically adjusts the bandwidth characteristic of the communications channel to raise the bandwidth of the communications channel in response to the first bandwidth event; and  
15 ii) the bandwidth manager process dynamically adjusts the bandwidth characteristic of the communications channel to lower the bandwidth of the communications channel in response to the second bandwidth event.

20 21. The communications device of claim 20 wherein the second bandwidth event indicates an end of the first bandwidth event.

22. The communications device of claim 20 wherein the first bandwidth event indicates a browser event for at least one of:

25 i) a beginning of a communications session;  
ii) a beginning of content processing;

and wherein the second bandwidth event indicates a browser event for at least one of:

i) an end of a communications session;  
ii) an end of content processing; and  
30 iii) a timeout associated with an earlier bandwidth event.

23. The communications device of claim 14 wherein:

the communications device is a browser enabled device and wherein the first event indicates a browser event requiring a browser in the communications device to access content from a remote computer system; and

wherein when the bandwidth manager process performs the operation of calculating, the bandwidth manager process calculates the first new value of the bandwidth setting of the communications channel to accommodate additional bandwidth used to receive the content from the remote computer system.

24. The communications device of claim 23 wherein when the bandwidth manager process performs the operation of detecting the first event, the bandwidth manager process performs the operation parsing content accessed by the browser to detect a content reference within the content.

25. The communications device of claim 23 wherein when the bandwidth manager process performs the operation of detecting the first event, the bandwidth manager process detects a communications session message generated by the browser.

26. The communications device of claim 1 wherein the communications device is a wireless device and the communications channel is a wireless communications channel and wherein the bandwidth characteristic of the communications channel is at least one of:

i) a timeslot allocation for a time division multiple access protocol operating on the communications channel;

ii) at least one frequency for a code division multiple access protocol operating on the communications channel; and

ii) at least one frequency code for a code division multiple access protocol operating on the communications channel.



27. A computer program product having a computer-readable medium including bandwidth manager application computer program logic encoded thereon for adjusting bandwidth of a communications channel, such that the computer program logic, when performed on at least one processor within a communications device, causes the at least one processor to perform the operations of:

detecting a first event indicating a first anticipated change in a bandwidth requirement of the communications channel;

calculating a first new value for a bandwidth setting of the communications channel in response to detecting the first event; and

adjusting a bandwidth characteristic of the communications channel according to the first new value of the bandwidth setting such that communications channel can accommodate the first anticipated change in the bandwidth requirement.

28. A communications device comprising:

an communications interface;

a memory system;

a processor; and

an interconnection mechanism coupling the communications interface, the memory system, and the processor;

wherein the memory system is configured with a bandwidth manager application, that when performed on the processor, provides a means to dynamically adjust bandwidth of a communications channel operating on the communications interface, such means including:

means for detecting a first event indicating a first anticipated change in a bandwidth requirement of the communications channel;

means for calculating a first new value for a bandwidth setting of the communications channel in response to detecting the first event; and

means for adjusting a bandwidth characteristic of the communications channel according to the first new value of the bandwidth setting such that communications channel can accommodate the first anticipated change in the bandwidth requirement.